

ABSTRACT

The invention relates to a foamed material and to a method for the production of said foamed material. According to the inventive method, foamed material is produced with nanosized foam bubbles Z1 without the need to surmount the energy barrier which usually occurs during phase transitions and nucleation processes. The aim of the invention is to produce a foamed material in a controlled manner, said material having a foam bubble density of $10^{12} - 10^{18}$ per cm^3 and an average foam bubble diameter of 10 nm -10 μm hat. The inventive method is based on the dispersion of a second fluid K2 the form of pools Po in a matrix of a first fluid K1 involving supramolecular interaction of an amphiphile K3. The first fluid K1 is provided as a matrix in the reaction chamber RK and the second fluid K2 is provided in pools. The second fluid K2 is transformed into a near-critical or supercritical state with a near-liquid density by modifying the pressure and/or temperature. The second fluid K2 is provided entirely or almost entirely in the form of pools which are evenly distributed in the entire first fluid K1. Pressure discharge causes the second fluid to return to a state of gaseous density while the pools are blown to form nanosized foam bubbles Z1.